

REMARKS

With regard to independent claim 14, it is respectfully submitted that the Examiner has not properly interpreted the teachings of Barr et al. '824 and Klein '177 in applying them to the application at hand. Claim 14 currently reads as follows:

14. A non-lethal impact munition comprising:

a projectile comprising a projectile nose and a projectile base,

said projectile separably joined to a propulsion shell comprising propulsion means to separate said projectile from said propulsion shell;

said projectile nose composed of a frangible, rigid, polymer foam material characterized in that said projectile nose is crushed upon impact with a target in a manner that absorbs and dissipates energy of impact,

said projectile nose comprising a cavity;

wherein said projectile nose has a rounded forward end and a cylindrical wall,

said cylindrical wall being thinner than said forward end,

such that said thinner cylindrical wall breaks prior to said forward end upon impact to absorb and dissipate impact energy.

Thus, the invention requires a projectile comprising a projectile nose 30 and projectile base 30, the projectile being joined to a propulsion shell 10 (numbers referring to elements in the drawings of the application at hand). Barr et al. '824 discloses a projectile 51 comprising a nose

53 and a base 55, the projectile 51 being joined to a case 21 (equivalent to the propulsion shell 10 of Applicant).

The Examiner states in lines 3-5 on page 3 of the office action that the nose 53 of Barr et al. '824 has a cylindrical wall that is thinner than the forward end "such that the thinner cylindrical wall breaks prior to the forward end upon impact". This is not correct. In device of the '824 patent, it is the projectile base housing 55 that ruptures, not the cylindrical wall of the nose 53. At col. 4, lines 20+ of the '824 patent it is clearly stated:

"On impact of the nose 53b of the projectile with a target or other object, the flexible wall 53a is flexed inwardly by the target resistive driving force on the piston-forming thick nose 53b and the inertial forces of the projectile, which tends to result in the piston-forming nose being effectively driven rearward into the cavity 57, and the base housing cavity side walls 55a, 55f are pressurized and rupture along one or more of corners 55a"

Thus, it is the projectile 55 of the Barr et al. '824 device that ruptures, not the nose 53. The design of the nose 53 is such that it acts as a piston, pressurizing the cavity 57 to burst the base housing 55. If the nose 53 ruptures, it will not act as a piston and cause rupture of the base housing 55.

Furthermore, substituting the frangible foam nose 18 taught in Klein '177 would not result in a functional device, since any rupture of the nose element in the Barr et al. '824 device would not cause the device to function properly. The Examiner states in the last line of paragraph 5 on page 2 of the office action that Barr et al. '824 discloses the nose to be composed of a "rigid" material. This is not correct, as the '824 patent clearly defines the nose to be composed of a soft, elastic material (col. 3, lines 24-31). Substitution of the frangible, rigid nose of Klein '177 for the nose in Barr et al. '824 would not be obvious, and there is no suggestion or motivation to do so in light of the fact such a substitution would make the Barr et al. '824 device inoperable in its intended manner. Without a resilient nose 53 acting as a piston, the base

housing 55 would not rupture along one or more of its corners 55a as described. With no rupture of the base housing 55, dispersal of the payload would be minimal, since the majority of the payload is contained within the portion of the cavity formed by the cylindrical wall of the base housing 55. The rigid foam noses of Applicant and Klein '177 dissipate energy upon impact, they do not direct that energy into the cavity as is required in the Barr et al. '824 device.

With regard to the other independent claim, claim 14 reads as follows:

27. A non-lethal impact munition comprising:

a projectile comprising a projectile nose and a projectile base, said projectile separably joined to a propulsion shell comprising propulsion means to separate said projectile from said propulsion shell;

said propulsion shell further comprising

an annular forward wall having a forward shell rim,

a shell base joined to said shell forward wall,

and a propulsion cavity disposed in said shell base, said propulsion means being retained by said propulsion cavity;

said projectile base comprising

a forward wall joined to a cylindrical wall to define a projectile cavity,

and a rearward extending annular insertion flange,

whereby said insertion flange is received within said shell rim and said shell forward wall such that said shell cavity and said projectile cavity are combined;

said projectile nose comprising

a rear plug wall joined to a cylindrical wall

and a forward end joined to said cylindrical wall,

the combination of said forward end, said cylindrical wall and said rear plug wall defining a nose cavity,

said projectile nose composed of a frangible, rigid, polymer foam material characterized in that said projectile nose is sufficiently rigid to maintain aerodynamic stability during flight but is sufficiently frangible to crush upon impact with a target in a manner that absorbs and dissipates energy of impact to reduce the energy transferred to such target by said projectile; and

a payload disposed within said cavity of said projectile nose, whereby said payload is laterally dispersed from said projectile nose upon impact, such that additional energy of impact is dissipated to reduce the energy transferred to such target by said projectile.

The Examiner further states on page 3, lines 7-8, that the projectile nose of Barr et al. '824 comprises "a rear plug wall joined to the cylindrical wall". This is not correct. The nose 53 has no rear wall, only a rim surrounding the forward portion of the cavity 57. In actuality, it is the base housing 55 of the '824 device that comprises a rear wall. The nose 53 of the '824 device has no rear wall - it must be open for the nose 53 to act as a piston for pressurization of the cavity 57. Claim 27 requires the presence of a rear plug wall 34 as part of the nose 30. Adding this required structure to the Barr et al. '824 device would result in a non-functional device.

The Examiner on page 3, lines 14-17, the Examiner states that the projectile base 55 comprises a forward wall (?) joined to a cylindrical wall to define a projectile cavity and a rearward extending annular insertion flange. The structure of the Barr et al. '824 projectile base 55 has no forward wall 21, has no projectile cavity 23 and no rearward extending annular flange (i.e., a ring-like extended rim or collar) 25 as required by claim 27. The base housing 55 instead has a forward rim 55fw, a payload cavity 57, and a rearward extending cylinder 55g. Furthermore, claim 27 requires that the projectile cavity 23 combine with the shell cavity 15.

The projectile base housing 55 of Barr et al. '824 is separated from the shell cavity by of cartridge 11 by a pusher disc 41 and the sabot 31.

As argued previously and in more detail relative to claim 14, the combination of the teachings from Klein '177 is not suggested, motivated or made obvious regarding use of a rigid and frangible nose member, since such a nose would not dissipate the energy of impact (as required by the claims), but would render the Barr et al. device non-functional since there would be no directed piston-like action to burst the base housing 55.

The Examiner also rejects claim 27 as obvious over Barr '038 with the previously cited prior art. It is submitted that Barr '038 does not provide any more reasoned basis for the rejections. Barr '038 teaches a projectile having a base 31 and a nose 23 made of a resilient, elastic material. Contrary to the statement of the Examiner on page 4, lines 18-20, the projectile base 31 of the Barr '038 device has no structure defining a projectile cavity - there is only a payload cavity. Additionally, there is no rearward extending annular insertion flange (i.e., a ring-like extended rim or collar) in the projectile of Barr '038. The Examiner also states on page 4, lines 20-21 that Barr '038 discloses a projectile with a nose comprising a rear plug wall. The nose 23 comprises no rear plug wall - the rear of the nose 23 is a rim with a large opening, and is only sealed by the base 31.

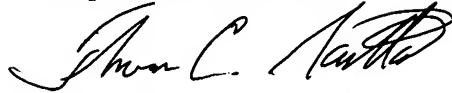
For reasons more thoroughly articulated above, it is reiterated that the combination of the teachings of Barr '036, Barr et al. '824 and Klein '177 would not result in a functioning device, and therefore there is no justification, rationale or motivation that would lead one to combine these teachings. The independent claims have required elements and combinations that result in required functions that are not made obvious by the combination of the cited prior art. As stated in MPEP 2143, there must be some suggestion or motivation, either in the references themselves

or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. There must be a reasonable expectation of success. The prior art must teach or suggest all the claims limitations. It is submitted that these three criteria are not met in this case.

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990); *In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992). If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). To claim prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *Ini re Royka*, F.2d 981, 180 USPQ 580 (CCPA 1974). All the holdings above are applicable to the case at hand.

It is respectfully submitted that the independent claims are patentable on the basis of the above arguments, and therefore all the dependent claims are also allowable. It is respectfully submitted that the claims as presented are patentable, on the basis of the above remarks, and reconsideration and subsequent passage for allowance is hereby requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Thomas C. Saitta". The signature is fluid and cursive, with a large, stylized initial "T" and "S".

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